

## Undirected Endo-Cayley Digraphs of Cyclic Groups of Order Primes

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**Abstract :** Let  $S$  be a finite semigroup,  $A$  a subset of  $S$  and  $f$  an endomorphism on  $S$ . The endo-Cayley digraph of a semigroup  $S$  corresponding to a connecting set  $A$  and an endomorphism  $f$ , denoted by  $\text{endo-Cayf}(S, A)$  is a digraph whose vertex set is  $S$  and a vertex  $u$  is adjacent to a vertex  $v$  if and only if  $v = f(u)a$  for some  $a \in A$ . A digraph  $D$  is called undirected if any edge  $uv$  in  $D$ , there exists an edge  $vu$  in  $D$ . We consider the undirectedness of an endo-Cayley of a cyclic group of order prime,  $Z_p$ . In this work, we investigate conditions for connecting sets and endomorphisms to make endo-Cayley digraphs of cyclic groups of order primes be undirected. Moreover, we give some conditions for an undirected endo-Cayley of cycle group of any order.

**Keywords :** endo-Cayley graph, undirected digraphs, cyclic groups, endomorphism

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